California's Health

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MAN'S FUTURE PHYSICAL AND PHYSIOLOGICAL ENVIRONMENT*

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The world we live in is changing so fast and in so many ways that it continually presents new and fascinating problems. It is changing more rapidly now than at any time in the past and will certainly continue to change at a constantly accelerating rate for as many future generations as man can visualize. A study of the radioactivity of some of the rocks in the earth's crust shows that the earth has existed for something more than four billion years; other studies show that life has existed on the earth for about two billion years, that human beings have inhabited the earth for about a million years and have lived in more or less civilized communities for at least 10,000 years. Yet most of man's knowledge concerning the universe in which he lives has been accumulated within our generation and many of the most fundamental changes in man's mastery of the forces of nature and ways in which he can utilize natural resources to make life easier, safer, more pleasant, and more dignified have occurred in the last twenty years.

U.S. Living Standard

We in the United States know that we have the highest standard of living ever enjoyed anywhere by any people. With only 7 percent of the world's population, we use about 40 percent of the power in the world to produce about 40 percent of the world's goods. We have more automobiles, more telephones, more television sets, more electrical appliances, more miles of superhighways, than all of the rest of the world combined. Our workers have at their disposal over eleven horsepower per man, as compared with about four horsepower per man in the other highly industrialized nations of the world, such as England, Germany, France, and the Soviet Union, and only a pitiful fraction of a horsepower per worker in the less progressive nations. As a result our productivity per worker is about twice that of the nation which holds second place.

The United States is using up the world's resources about nine times as fast as the rest of the world. In the United States we consume about 18 tons per capita per year, as compared with a world average of only 2 tons per person. We use about 7.2 tons of fuel, 5.4 tons of building materials, 2.55 tons of metallic ores, 0.75 tons of food, and 2.15 tons of agricultural supplies per person per year. We use 50 percent of the five important metals, iron, zinc, copper, lead and manganese, and twice as much petroleum and rubber as the rest of the world. The United States consumes 80 times as much iron per capita as India. In the United States the average person has more food and better food than any other people in all history.

Physical and Physiological Environment

When we consider man's future physical and physiological environment, we must include the purity, nutritious qualities, abundance, and price of food expressed in equivalent hours of work; the purity of his water supply and of the air he breathes; opportunity for pleasant and interesting employment; spacious congenial or crowded ugly living conditions; probability of exposure to disease; probable life span; and freedom from or harmful exposure to dangerous radiation which may injure his genes, shorten his life, and decrease his opportunity for happiness. Evidently our answers to these problems may be very different, if we restrict our discussion to conditions in the United States, from what they would be if we considered the environment and standard of living of human beings all over the earth. For instance, the population of the United States is expected to double in the next 40 years. This presents no present problem since we could easily raise three times as much nutritious food as we do and the United States is not crowded. In China also, if the present rate of increase continues, the population will double in 40 years. But China is already overcrowded and can only with difficulty supply a bare subsistence diet to her present population. In Japan and India the problem of expanding population also is acute and must be taken care of in our generation or result in abject misery and starvation.

Our Shrinking World

Let us think for a moment of various ways in which our world is changing. Perhaps the most evident change is that our world is shrinking. Only a few generations ago that part of the world which affected most people was their own little community. Most of

* Condensation of an address given at Western Branch, APHA Annual Meeting, San Francisco, June 1959, with recent additions by the author.

them knew rather vaguely that other people in faraway countries had customs and beliefs somewhat different from their own; a few hardy souls actually traveled hundreds or even thousands of miles from home. However, travel was slow, dangerous, and difficult. Even 100 years ago the pioneers, who opened the West, traveled by oxcart, and 10 miles was a good day's journey. Newspapers in the cities were usually printed once a week and any news from foreign countries was months old before it appeared. Today the world is linked by a vast system of transportation and communications. Newspapers bring us news from all over the world within hours of the occurrence of the events described. The radio in practically every home allows anyone to listen as the President delivers an important address to Congress or gives a fireside chat to the people of the nation, and now almost all of the homes in the land have television sets which enable them to see important events, enjoy interesting games and dramatic or operatic performances, perhaps occurring thousands of miles away, yet see these things the instant they occur. Not all the dreamers and fairy-tale spinners of all the ages had imagined anything so fantastic and seemingly so impossible. A vast telephone system enables you in the comfort of your own home to be connected within minutes and at a relatively low cost to any one of 97 percent of the more than 100,000,000 telephones of the world. A comfortable train will carry you hundreds of miles at a cost of a few hours work, and the airplane has become a standard vehicle of long-distance travel, not for just a favored few, but for most of the people in our land. Commercial jet planes now travel routinely from coast to coast in a little more than four hours, our B-58 Hustler bomber travels at more than twice the speed of sound and we shall soon have in quantity production fighter planes with a cruising speed of 1500 miles per hour. On the drawing boards we are designing commercial planes which will within a few years cruise at 2000 miles per hour. Both the United States and the Soviet Union have intercontinental ballistic missiles capable of traveling over 6000 miles at a speed of more than 15,000 miles per hour, thus capable of crossing the ocean in 20 minutes. And the Sputniks, the Vanguards, the Explorers, and the Discoverers, majestically encircling the Earth every hour and a half, vividly proclaim to the world that we are on the verge of inter-planetary travel, to Mars, to Venus, and possibly later even to the more distant planets.

Space Probes

During 1959 the United States put 10 new satellites into orbit. However, the Soviet scientists had three sensationally successful space probes, namely the three "luniks," which put them well in the lead. The Soviet launching vehicles were far larger, heavier, and more powerful than ours. For instance, Lunik No. 1, which went into orbit around the Sun, weighed 3,245 pounds, compared with our tiny Pioneer IV, which we sent into orbit around the Sun a few months later.

During the first six months of 1960, five satellites will be orbited by the United States, every one of which is destined to have a profound influence, not only on Americans, but on all human beings in every hamlet on Earth. Possibly the most important of these, in its immediate effect on our way of life, is the communication satellite to be orbited in an equatorial plane at a height of 22,300 miles above the Earth's surface. At this height its orbital velocity is such as to keep it always above the same point on Earth, since its speed corresponds exactly to the speed with which the Earth below it turns on its axis. At this height almost half the surface of the Earth is exposed to the satellite. Therefore the satellite can act as a relay to pick up any radio or television signal, originating at any point on that face, and re-transmit it to all other points on that surface. It is planned to have three or four such stationary relaying satellites in permanent orbit, by means of which any radio or television program, originating at any point on Earth, will be broadcast instantaneously to every city, hamlet, and farm on Earth. And these relaying satellites will be able to transmit many hundreds of such programs simultaneously at a cost only a fraction of the cost of present-day programs. The educational value of such programs, especially to backward populations of the world, is almost impossible to overestimate.

In 1962 our schedule calls for sending an unmanned satellite to the farthest extremity of the solar system, where the planet Pluto slowly circles the Sun 3,667,000,000 miles away. Although, when this satellite leaves the Earth, we shall not have developed communication equipment capable of receiving radio messages over this enormous distance, about 6000 times the greatest distance over which man so far has ever received accurately a radio message, we are confident that by the time this satellite has covered the 3,667,000,000 mile journey, 4000 days or about twelve years later, equipment capable of receiving and interpreting the radio message will have been developed. The radio transmitter on this satellite will radiate 100 watts, about the power given to a single incandescent light bulb such as is used in the home. Even though highly directive antennas will give this radiated signal an advantage of 4000 in the direction of the earth, the signal received per square mile will be so small that it would have to be received continuously for 130 years to equal the energy exerted by a mosquito in raising itself one inch. That we are still confident that information concerning the magnetic field, the temperature, the abundance of micrometeors, and the strength of cosmic rays in this space 3,667,000,000 miles away will be received and understood, is a tribute to the scientific ability and ingenuity of the men who are so rapidly developing the science of electronics.

The Space Age

In 1965 both the General Electric Company and Boeing are scheduled to have finished the development of nuclear propelled space ships, capable of carrying men between the planets. In 1965 we should also have finished the development of the five-stage missile Nova, capable of putting a 75-ton satellite into orbit, and within 10 years we hope to have manned satellites on their way to Mars and also to Venus, satellites which we are confident will return safely, bringing back detailed information concerning these distant sisters of the Earth, information concerning life on these planets, perhaps even concerning intelligent life on Mars. Until a few months ago most scientists were agreed that only a very primitive form of life exists on Mars, plant life possibly resembling mosses and lichens, possibly also a very primitive wormlike type of animal life. Now Soviet scientists have reopened the subject, with conjectures that the remains of a very high culture, which developed on Mars millions of years before it did on Earth, may be found. They even give data, which seem reasonable to them, seeming to point to the possibility that one

of the smaller moons of Mars may be an artificial satellite, which has been orbiting Mars for thousands, perhaps hundreds of thousands of years, since it was first put into orbit by intelligent creatures there long before man developed a civilization on Earth. Perhaps not until men actually travel to Mars will the truth or error of this intriguing theory be established, but the possibility that it might prove true makes the first manned expedition to Mars even more exciting than it would otherwise be.

A few generations ago most men were confident that the Earth was the center and the most important part of the universe, that the Sun, Moon and Stars had been created for man's special benefit, and that the whole process of creation had occurred only 6000 years ago. Today we know that the Earth is one of the minor planets of the Sun, that the Sun is one of about 100,000 million stars composing what we call Our Galaxy, and that by means of the Hale telescope on Mt. Palomar we can photograph 1000 million similar galaxies. Moreover, this takes us out only about two billion light years into space. A light year is the distance light travels in a year at the rate of 186,000 miles per second. Thus a light year is approximately six millions of millions of miles, and the Hale telescope enables us to probe the Universe two billion times this far. Although this portion of the Universe, which we can study, is undoubtedly small, compared to the whole, it is large enough to be considered a representative sample of a Universe which may be infinite in both time and space. Although some of the galaxies are so far away that it has taken light two billion years to reach us, so that what we know about such galaxies is what they were two billion years ago, rather than what they are today, it is amazing how much we know about them. We know their sizes and distances, the sizes and number of stars which compose them, the velocities with which they are receding from us and the velocities with which they are turning on their axes, the chemical substances of which they are composed, the surface temperatures and the far higher temperatures at the centers of the stars, the way in which atomic energy is generated in the stars and the rate of such generation.

Moreover, we know that the Sun is not the only star which has planets, that the star nearest to the solar system, Alpha Centauri, about 4.3 light years away, has at least one large planet and possibly others, one of which could be similar in size and orbit to the Earth. Although we do not know now, and possibly never will know, it seems highly probable that a large percentage of the stars have families of planets and that on many of such planets there is intelligent life. When we consider how rapidly our own culture and knowledge of the Universe have expanded within our generation and note that on many of the planets orbiting around stars in distant galaxies life may have started many millions of years before it started on Earth, it seems highly probable that on many millions of millions of planets there may be civilizations as far surpassing ours as our own surpasses that of our savage ancestors of a few thousand years ago. It is therefore to be expected that one of the dreams of mankind is some day to be able to leave the Earth and explore at least that portion of the solar system nearest the Earth, making trips to the Moon, to Mars and Venus and later to the more distant planets of our solar system, possibly still later to visit planets orbiting around the nearest stars. We are just now entering a new Space Age.

The Atomic Age

We are also entering an Atomic Age. Atomic energy is the oldest and the most abundant thing in the Universe and the newest and most spectacular of man's achievements. For many billions of years many billions of billions of stars have been generating atomic energy. In fact, all energy developed by all stars throughout all time is generated as atomic energy. It is only slightly more than 50 years ago that Albert Einstein showed the world the equivalence of matter and energy. He showed that matter can be converted into radiant energy, that radiant energy can be converted into matter, that the conversion in both directions is going on around us continuously, and he gave a very simple equation showing just what this relationship is, namely $E = Mc^2$. In this equation E stands for energy in ergs, M stands for mass in grams, and c stands for the velocity of light in centimeters per second, that is 3×10^{10} or thirty billion centimeters per second. This shows that each gram of mass is equivalent to 9×10^{20} or nine hundred billions of billions of ergs of energy. Perhaps we shall understand this better if we change ergs to kilowatt-hours, the unit in which our electric light bill is computed. A gram is the weight of a cubic centimeter of water, roughly the weight of a third of a teaspoonful of water. The energy equivalent of this third of a teaspoonful of water, or an equal weight of any other material, is 25,000,000 kilowatt-hours. A kilowatt-hour is the energy necessary to hurl a quarter of a ton of water a mile high, so the energy locked into a third of a teaspoonful of water, or the equivalent weight of anything else, could hurl over six million tons of water a mile high. Evidently atomic energy is of an entirely different order of magnitude than energy released in the burning of ordinary types of fuel or the explosion of conventional types of explosives. A pound of uranium 235 or of plutonium, the fissionable sources of energy used in our atomic reactors, releases about three million times as much energy as an equal weight of coal or oil.

Power From Atomic Fission

In the United States, the Soviet Union, and the United Kingdom atomic reactors are already contributing toward meeting the need for electrical energy for industries and homes. Already in California we have atomic reactors at Santa Susana and

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at Vallecitos, which have played a notable part in showing the world how atomic reactors can be built and operated now so as to be almost competitive with electric generating plants burning conventional fuels, and have demonstrated that 10 years from now we shall have atomic reactors which are fully competitive with our best conventionally fueled generating plants. The Pacific Gas and Electric Co. will have in operation in 1961 a 60,000 kilowatt atomic reactor near Eureka, which will be competitive even then with conventionally fueled plants in this area of rather high priced fuels. This year a 180,000 kilowatt atomic reactor near Dresden, Illinois, will go into operation. Next year it will be joined by atomic plants of comparable capacities in New York, Massachusetts, Michigan, and Nebraska. The Soviet Union recently put a 100,000 kilowatt reactor into operation, and is installing three similar reactors in the same station. In the United Kingdom between 6,000,000 and 8,000,000 kilowatts of installed reactor capacity will be in operation by 1965. Certainly 25 years from now an appreciable percentage of all new electric generating stations all over the world will be atomic reactors. Long before that time all of the navies of the world will use atomic propulsion and most of the new commercial ships will also be equipped with atomic reactors, rather than coal or oil burning engines of propulsion.

If atomic power had not entered the picture when it did, our coal, oil, and gas could have supplied our power needs for not more than the next hundred years. When it is considered that the Sun will radiate at about its present rate for about six to eight billion years, giving the Earth a climate for that length of time not too greatly different from that we enjoy today, it is reasonable to expect that the human race may be around for a long time. It looks as though mankind might need economical sources of energy for billions of years, if we are to maintain a high standard of living which is only possible when ample power is available. Our coal, oil, and gas could not have taken care of even a millionth of that need. Moreover, these hydrocarbons are so much more valuable for chemical purposes, where they can be used over and over again for many millions of years, than they are as fuels, where once burned they are gone forever, that we shall not want to burn them once atomic power is completely competitive.

Power From Atomic Fission

Atomic reactors, releasing energy through the fission of the large nuclei of uranium or plutonium, in which process part of the original mass is converted into energy, could take care of the world's power needs for hundreds of thousands of years to come. However, it is doubtful that it will be so used for more than a few generations. In the United States, the Soviet Union, and in the United Kingdom research is under way which we hope and believe will make it possible for man to use the principle of fusion, rather than that of fission, to generate unlimited amounts of economic atomic power. In the stars fusion of the light simple hydrogen nuclei to form the heavier helium nuclei is responsible for all of the energy generated in them. However, in the stars the internal temperature is about 20,000,000°C. and the pressure is about 300,000,000 times atmospheric pressure. Under these conditions the fusion of hydrogen to form helium takes place, but very slowly. A single reaction takes 6,500,000 years. In the desired controlled fusion on Earth man needs to speed this reaction until it is completed in a fraction of a second.

This requires that we use deuterium or tritium, heavy isotopes of hydrogen weighing respectively two or three times as much as ordinary hydrogen. It also requires that we work at temperatures of the order of 300,000,000° C. if we use deuterium alone, or at least 100,000,000° C. If we can use a combination of deuterium and tritium. About one part in 6000 of the water in our oceans is so-called heavy water, in which the hydrogen involved is deuterium, of atomic mass 2, rather than ordinary hydrogen of mass 1. However, tritium is the scarcest thing in nature. Our atmosphere is so enormous that there are about 2,000,000 tons of air for every man, woman and child on Earth. Fairly uniformly mixed in this atmosphere is about two pounds of tritium, which is hydrogen of atomic mass 3. Moreover, tritium is radioactive with a half life of 11 years. New tritium is formed continuously in our upper atmosphere through the action of cosmic rays, the rate of formation being exactly balanced by the rate of radioactive disintegration. Man can produce tritium at a high price. About $4.2 billion was invested in plants in the United States to produce tritium at a time when we thought we needed it for hydrogen bombs. Now that we are using lithium hydride bombs, we no longer need the tritium for bombs, so it is available for its many other valuable purposes, one of which is its use in fusion type atomic reactors.

So far we have not succeeded in reaching a temperature more than about 10,000,000° C., evidently far short of the 100,000,000° C. or possibly 300,000,000° C., which will probably be needed. However, practically all of the scientists working on the problem are confident that in the not too distant future some one will achieve the scientific break-through, which will demonstrate that generation of atomic energy through fusion is possible and that, within a few generations after this, atomic energy generated through fusion will be supplying most of the world's power needs economically and in abundance.

Air Pollution

Of course each new development brings its problems, and we would be foolish indeed if we assumed that the only problems to be solved were the ones which we foresee clearly now. Surely no one foresaw when the automobile was first developed that it would within a generation have killed and injured more people in the United States than we have lost in all the wars of our history, or that its exhaust gases would be playing a major part in transforming parts of California into smog-ridden areas with heavy crop losses yearly, and where on a continually increasing number of days of the year, these gases in the atmosphere under the influence of sunlight produce acrid odor, reduce visibility, irritate the eyes, and may possibly be decreasing life expectancy.

Radiation

Dangerous radiation, as a by-product of both space travel and of atomic energy, may well prove a tougher problem to solve than we foresee now, even though the advantages brought about through the use of radioactive isotopes are already saving American industry about a billion dollars a year and may be saving as much as five billion dollars a year by 1970. Added to this figure are the countless savings brought about through their use in agriculture, food preservation, medicine, and research using tagged atoms

to study such organisms as blood cells, bacteria, viruses, and living plants and animals. Radioactive isotopes are also used to produce desired mutations in plants and animals and to produce desired changes in the physical and chemical characteristics of materials. Radiation has already proved to be a very valuable tool in the detection and control of cancer, and continual progress is being made in its use. However, radiation from fallout elements, from radioactive isotopes in the residue from atomic reactors, or from military activities, may prove to be man's most pressing problem, other than the explosive increase in population, and may well be the most important change in man's future physical environment.

Effects of Air Pollutants On Crops to Be Studied

A new Agricultural Air-Research Program is being instituted at the University of California Citrus Experiment Station at Riverside.

The AARP is a million-dollar, cooperative program of industry, agriculture, local government, and the University to evaluate effects of air pollutants toxic to field crops in California.

C. Ray Thompson, who heads the program, is leaving the U.S. Department of Agriculture's Western Regional Research Laboratory at Albany, California, where he has been engaged in biochemical investigations of forage crops. He will be responsible for organizing a team of specialists to measure the effects of air pollutants on plant growth, crop yield, and other crop products.

The study of the effect of pollutants on oranges and lemons now is scheduled for a period of six years, but it is expected that the program will include other crops and become an integral part of the Citrus Experiment Station's efforts in the investigation of smog problems.

Before Babylon had any formalized medicine, the sick were brought into the square at the city's market place. Courtesy required that all who passed by talk with the sick, learn the nature of their illness, and recommend a remedy if the passer-by had recovered from such a malady.—*Journal of American Medical Assn., Vol. 17, No. 12.*

MEETINGS SCHEDULED

April 4-8—U.S.-Mexico Border Public Health Assn. 18th Annual Meeting, Hermosillo, Sonora

April 10-14—Western Regional Conference on Migratory Labor, Phoenix, Ariz.

April 24-27—Calif. State Dental Assn., Annual Meeting, San Francisco

May 1-4—Calif. Assn. for Health and Welfare, Annual Meeting, Berkeley

May 4-6—Calif. Congress of Parents and Teachers, Annual Meeting, San Francisco

May 5—Northern Calif. Public Health Assn., Annual Meeting, Castlewood Country Club, Alameda County

May 6-8—Student American Medical Assn., Los Angeles

May 15-19—National Tuberculosis Assn., Annual Meeting, Los Angeles

May 24-26—Western Branch, A.P.H.A. Annual Meeting, Denver

June 1-4—American Assn. of Bioanalysts and California Assn. of Clinical Laboratories, Joint Annual Meeting, San Francisco

Martha Bachmann Dies

Martha Hohl Bachmann died March 10 at her home in Berkeley after a long illness. Mrs. Bachmann was a microbiologist with the State Department of Public Health for almost 32 years. She was in charge of the biologics section of the Division of Laboratories for several years before her retirement in 1958.

Mrs. Bachmann, a native of Pennsylvania, came to Berkeley in 1920, graduated from the University of California with honors in 1923, and started work with the Department in 1925.

She is survived by her husband, Dr. J. A. Bachmann, a consultant in food technology.

Kingsley Davis to Speak At Nyswander Lecture

Dr. Kingsley Davis, world renowned demographer, and Professor of Sociology and Social institutions at the University of California, Berkeley, will deliver the fourth annual Dorothy B. Nyswander lecture in the auditorium of Earl Warren Hall on the Berkeley campus April 6 at 8 p.m. The address will be on "Populations and Welfare in Industrial Societies."

The session, honoring Dr. Nyswander, professor emeritus of health education, U.C. School of Public Health, will be open to the general public.

Spanish-English VD Pamphlet Published By Department

A leaflet giving the signs and symptoms of syphilis and gonorrhea has just been published by the State Department of Public Health for use with Spanish-speaking persons in California who have difficulty reading English. The text on the top part of each page is written in Spanish, and is repeated on the lower part in simple English.

The title of this colorful, pocket-sized leaflet is "Peligro! Danger!" In addition to giving the signs and symptoms of gonorrhea and syphilis, it discusses the way these diseases are spread, and stresses the importance of going to a doctor if signs of venereal disease are present.

Copies are being made available to local health departments throughout the State.

Revised Edition of Industrial Ventilation Manual Published

A revised and enlarged edition of the Industrial Ventilation Manual is now off the press and is available from the Committee on Industrial Ventilation, Box 453, Lansing 2, Michigan.

The manual is the official publication of the American Conference of Governmental Industrial Hygienists. The recommended practices are approved by federal, state, and municipal government industrial hygiene departments.

The revised 6th edition has been completely re-edited and is available with a flexible cover for $4.00, or with a hard cover for $7.00.

Personals

Miss Constance Grass, social work consultant, has returned to the State Department of Public Health after an eight-month leave for special training. She spent four months at Syracuse University, Syracuse, N.Y. and four months in Rome, Italy in a training program for professional people interested in employment in foreign countries at some time in the future. This training is financed by a grant from the Carnegie Foundation.

Harold L. Helwig, Ph.D., Chief of the Air and Industrial Hygiene Laboratory, State Department of Public Health, has been appointed consultant for the National Air Sampling Program of the U.S. Public Health Service.

Food Poisoning Outbreak Thoroughly Investigated

A recent outbreak of staphylococcal food poisoning is of particular interest as evidence that the mere isolation of coagulase positive staphylocci is not conclusive evidence of cause and effect relationship. It also points up the need for more detailed epidemiologic investigations such as the one conducted in this instance.

This outbreak of food poisoning involving a restaurant in a city of Northern California occurred in late January and early February. Investigation by the local health department resulted in discovery of 27 cases and isolation of *Staphylococcus aureus* from a number of specimens from various sources.

One middle-aged woman died of heart disease complicated by food poisoning; others were ill enough to require hospitalization. *Staphylococcus aureus* was isolated from the stomach contents postmortem of the woman who died.

The restaurant closed voluntarily over a period of several days during the investigation. On the day it reopened another case of food poisoning was reported. A specimen of emesis from this patient also yielded *Staphylococcus aureus.*

The same organism was isolated from specimens of ham, corned beef, roast beef, the cutting board on which meat was sliced, and creamed celery. It was also isolated from a nasal swab from the chef.

The Microbiology Laboratory of the State Department of Public Health performs tests for phage typing when cultures are submitted from the suspected carrier, the patients affected, and the suspected foods. All of these had been obtained by the local health department and the epidemiologic investigation had been thorough, so the phage typing was done in the State laboratory.

Phage type 6/47/53/54/75 at 1000 times the test dilution was identified in isolations from: stomach contents of the fatal case; emesis from the last case; and from the ham, corned beef and roast beef. A different phage pattern, 6/47/53/54/75/77/83 at 1000 times the test dilution, was found in cultures from the cutting board and the creamed celery. The nasal culture from the chef had a still different pattern, 6/7/42E/74/54/73/75.

From these tests it would appear that the human cases, the ham, corned beef and roast beef had a common source of contamination, but the chef was not the source as originally suspected.

It seems paradoxical that a complete investigation left the outbreak unsolved when a partial investigation only to the point of isolation of *Staphylococcus aureus* would apparently have solved the etiology and source of the food poisoning. However, in a thorough epidemiologic investigation, it may be just as important to clear a suspected source.

Attorney General's Opinion On Mentally Deficient

A recent opinion of the Attorney General of California concerns the voluntary admission of persons to state hospitals for the mentally deficient.

The opinion was given that Section 6602 of the Welfare and Institutions Code does not permit such voluntary admission.

The opinion was given in answer to a request from Daniel Blain, M.D., State Director of Mental Hygiene.

The conclusion of the Attorney General's opinion is:

"The wording of Section 6602, at first blush, appears to permit voluntary admissions to state hospitals for the mentally deficient, since that section permits voluntary admissions to any state hospital. However, an analysis of the legislative history of Section 7000, which designates state hospitals for the mentally deficient, demonstrates that prior to 1953, such hospitals were designated as homes for the feeble-minded and homes for the mentally deficient, whereas Section 6602 appeared in the code in its present form in 1943. Thus, doubt arises as to the meaning of "State hospital" as used in Section 6602. Additionally, most sections of the code dealing with mentally deficients at least inferentially presuppose a court commitment. Furthermore, to interpret Section 6602 as permitting the voluntary commitments in question would lead to absurd results concerning the payment for the care of mentally deficients. It would also upset long standing administrative practice of the Department of Mental Hygiene. For these reasons, it is concluded that Section 6602 does not permit the voluntary admission of persons to state hospitals for the mentally deficient."

Dr. Breslow Attends Meeting In Czechoslovakia

Lester Breslow, M.D., Chief of the Bureau of Chronic Disease, State Department of Public Health, returned March 14th from Czechoslovakia. Dr. Breslow had gone on the invitation of Dr. Karel Raska, Chief of the Institute of Hygiene and Epidemiology of that government, to give a paper at an International Epidemiological Symposium sponsored by the Czechoslovakian Society of Epidemiologists.

Dr. Breslow presided and gave the keynote address at the session of the symposium on the epidemiology of non-infectious diseases. His subject was "Occupational and Other Social Factors in Chronic Disease."

At the symposium, participants came from 14 countries and the World Health Organization.

After the meeting in Czechoslovakia, Dr. Breslow went to Yugoslavia and to Poland where he conferred with cardiologists and oncologists on the epidemiology of heart disease and cancer.

Dr. Breslow's trip was financed by the Rockefeller Foundation.

Change of Health Officers

New Health Officer: Donald Hewitt, M.D. (pro tem)
Territory: Butte County
Address: P.O. Box 1100, Chico
Date: January 23, 1960
Former Health Officer: Arnold W. Brockmole, M.D.

As of January 25, 1960, Amador City contracted to receive public health services from Amador County, and is now included in the area served by the Bureau of Public Health Contract Services of the State Department of Public Health. (Former Amador City Health Officer was Mr. Samuel McHarney.)

The newly incorporated Cities of Commerce and Lawndale, Los Angeles County, have arranged to receive their public health services from the County Health Department.

The newly incorporated City of Novato, Marin County, has arranged to receive its public health services from the County Health Department.

"Every man owes some of his time to the upbuilding of the profession to which he belongs."—*Theodore Roosevelt, quoted in Personnel Administration Sept.-Oct. 1959 issue.*

Advisory Hospital Council Meets in Los Angeles

The California Advisory Hospital Council meets April 1 in Los Angeles at the State Building to conduct final public hearings on policies to be included in the California State Plan for hospitals and health facilities for the fiscal year which begins July 1, 1960. During the meeting, priority sequence will be reviewed together with other factual information to be included in the 1960-61 State Plan. Future hospital planning, including State and local responsibilities for coordinated planning activities, will also be discussed.

Meetings of the Council are open to the public and are attended by health officers, hospital administrators, representatives of health and hospital organizations, and interested citizens.

REPORTED CASES OF SELECTED NOTIFIABLE DISEASES CALIFORNIA, MONTH OF FEBRUARY 1960

Disease	*Cases reported this month*			*Total cases reported to date*		
	1960	*1959*	*1958*	*1960*	*1959*	*1958*
Series A: By place of report						
Amebiasis	21	43	161	62	72	341
Coccidioidomycosis	12	18	13	33	48	30
Measles	1,403	4,305	2,722	2,376	6,957	4,375
Meningococcal infections	26	13	26	51	55	43
Mumps	2,089	1,257	2,022	4,022	2,276	3,905
Pertussis	101	160	275	234	348	532
Rheumatic fever	10	10	17	15	23	30
Salmonellosis	63	61	31	129	131	104
Shigellosis	111	93	86	242	173	239
Streptococcal infections, respiratory	3,000	2,274	1,080	6,508	4,046	2,178
Trachoma	--	21	--	--	21	1
Series B: By place of residence						
Chancroid	8	9	11	22	17	13
Conjunctivitis, acute newborn	1	2	3	2	3	6
Gonococcal infections	1,394	1,095	1,087	2,912	2,584	3,083
Granuloma inguinale	--	--	--	--	--	--
Lymphogranuloma venereum	--	2	3	7	5	7
Syphilis, total	624	483	449	1,152	959	1,061
Primary and secondary	114	62	37	213	134	80
Series C: By place of contraction						
Botulism	--	1	--	--	1	--
Brucellosis	3	3	2	3	3	7
Diarrhea of the newborn	2	--	11	5	7	14
Diphtheria	--	--	--	--	1	1
Encephalitis	33	24	29	64	51	64
Food poisoning (exclude botulism)	159	111	72	183	177	242
Hepatitis, infectious	257	238	150	487	450	339
Hepatitis, serum	7	3	6	12	10	20
Leprosy	--	2	1	2	3	1
Leptospirosis	--	1	1	--	1	2
Malaria	--	2	1	--	6	2
Meningitis, viral or aseptic	21	32	NA	56	68	NA
Plague	--	--	--	--	--	--
Poliomyelitis, total	10	17	11	32	28	28
Paralytic	9	14	9	29	24	18
Nonparalytic	1	3	2	3	4	10
Psittacosis	1	3	--	3	4	3
Q fever	2	1	--	4	2	--
Rabies, animal	10	3	4	24	8	17
Rabies, human	--	--	--	--	--	--
Relapsing fever (tick borne)	--	--	--	--	--	--
Rocky mountain spotted fever	--	--	--	--	--	--
Tetanus	2	4	2	2	7	5
Trichinosis	--	--	--	--	--	--
Tularemia	--	--	1	--	--	1
Typhoid fever	1	7	8	3	13	12
Typhus fever (endemic)	--	--	1	--	--	1
Other *	--	--	--	--	--	--
Tuberculosis [1]	--	--	--	769	892	1,103

* This space will be used for any of the following rare diseases if reported: Anthrax, Cholera, Dengue, Relapsing Fever (louse borne), Smallpox, Typhus Fever (epidemic), Yellow Fever.

[1] Tuberculosis cases are corrected to exclude out-of-state residents and changes in diagnosis.

Cardiovascular Institute Research Reported

A year of major contributions to medical science has been reported by the new Cardiovascular Research Institute of the University of California Medical Center at San Francisco.

Major findings on several problems of circulation and respiration have come from collaborative work by faculty members from many School of Medicine departments, visiting scientists, and a large corps of research fellows and trainees. Dr. Julius H. Comroe, Jr., is director of the Institute.

New light has been shed on mechanisms that may be involved in the massive "coronary shock" that follows heart attacks; on the role of the nervous system in controlling fatty acid metabolism, which is believed to be involved in development of coronary artery disease; and on the nature of emphysema, an increasingly common chronic lung disease that adds to the workload of the heart.

The Institute's educational program has attracted the country's largest group (39 this year) of research fellows and trainees in cardiovascular and pulmonary problems.

The Institute's work has been supported by the Legislature, Federal and State agencies, and many individuals and organizations, including 12 California county Heart Associations.

Visitors From Indonesia and Japan

Observation training programs were recently arranged by the State Department of Public Health for public health specialists from two countries. They were:

Indonesia

Dr. Albert G. J. Kandouw, head of Malaria Institute Branch, Makassar.

Dr. D. Bing Oei, acting chief, Malaria Institute, Semarang.

Dr. Poedjono, director, Malaria Institute Tandjungkarang, Sumatra.

Manaris Simandjuntak, health controller and assistant to provincial malariologist, Provincial Public Health Service, Semarang.

Japan

Dr. Takeshi Okuno, National Institutes of Health, Tokyo.

Illinois communities adopting fluoridation of public water supplies, a scientific method for prevention of tooth decay, now number 116, serving more than half of Illinois residents.—*Illinois Health Messenger, Vol. 30, No. 2.*

U.S. Laboratory Directors to Meet in San Francisco

The first joint annual convention of the American Association of Bioanalysts and the California Association of Clinical Laboratories will be held June 2, 3, and 4 in the new Jack Tar Hotel in San Francisco. Laboratory directors from all over the nation will meet to discuss new methods of bioanalysis and clinical laboratory techniques. William Reich, M.P.H., convention manager, states that nationally famous doctors, bacteriologists, and biochemists will be among the key speakers. In addition, there will be talks by leading authorities in the field of public health, a tour of the California State Department of Public Health, and exhibitions of the latest in scientific apparatus.

Department Participation

The convention program will start on Thursday, June 2, with guided tours of the California State Department of Public Health. Informal discussion groups will hear papers read by members of the American Association of Bioanalysts and by clinical laboratory directors, and public health officials will outline important development of state and national legislation in the laboratory field. Leading the discussions will be Malcolm Merrill, M.D., Director of the California State Department of Public Health; Howard Bodily, Ph.D., Chief of the Department's Division of Laboratories, and Max Chapman, M.D., Chief of the Department's Laboratory Field Services.

The Friday luncheon on June 3 will feature Stanley Marcus, Ph.D., Professor of Microbiology in the College of Medicine, University of Utah. Dr. Marcus will speak on "Current Aspects of Bioassay for Pyrogens."

On Friday evening, the banquet will feature an address by Harold T. Wilson, M.D., who will speak on "Electrolytes and their Laboratory Problems and Implications." Dr. Wilson is Professor of Internal Medicine, College of Medical Evangelists, Los Angeles.

The Saturday noon speaker will be Harold T. Harper, Ph.D., Associate Professor of Surgery and Physiological Chemistry, University of California Medical Center. His topic will be "Ammonia Metabolism in Liver Disease".

Margaret Beattie Banquet

The final banquet on Saturday will be in honor of Margaret Isabel Beattie, who is retiring after serving for many years as head of the Laboratory Science Department, School of Public Health at the University of California. Professor Beattie is one of the pioneers in the laboratory science field, and some of the important advances in laboratory techniques can be attributed to her leadership.

The key-note speaker at the Margaret Beattie banquet will be Peter H. Forsham, M.D., Professor of Medicine, and Chief of the Metabolic Institute, Medical Center, University of California. His subject will be "Medicine—2000 A.D."

Public Health Positions

Kern County

Senior Health Educator: Salary range, $527-$641. Depending upon qualifications may start above minimum. To head staff of two health educators and a graphic artist. Civil service and retirement benefits, sick leave, C.P.S. group insurance, paid vacation, mileage and expense reimbursements, credit union, good personnel practices. Master's degree in Health Education and three years' experience required. Write DeWitte T. Boyd, M.D., Health Officer, Kern County, P.O. Box 997, Bakersfield, California.

Merced County

Assistant Director of Public Health Nursing: Salary range, $4,980-$6,060. Small local health department; some field work. Minimum of two years' experience as staff nurse, California registration, and Public Health Nursing certificate required. Write to A. Frank Brewer, M.D., Merced County Health Department, P.O. Box 1350, Merced, California.

Orange County

Sanitarians: Salary range, $464-$516. First step increase after six months. Promotion to District Sanitarian possible with additional experience. Three weeks vacation and paid medical insurance. Requires California registration. Apply to Orange County Personnel Department, 801-C North Broadway, Santa Ana, California.

Placer County

Public Health Nurses: Salary range, $415-$505. Generalized public health nursing in county health department. Emphasis on tuberculosis control but included in program are venereal disease control, other communicable disease control, maternal and child health services, handicapped children services, and school nursing services in parochial schools. Well-rounded complement of employee benefits. Headquarters 35 minute drive from Sacramento. Variety of climatic and recreational advantages. Write to Assistant County Executive Officer, Courthouse, Auburn, California.

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